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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/816,164	03/26/2001	Hiroshi Nomura	04329.2555	7582

22852 7590 03/28/2003

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EXAMINER

STOCK JR, GORDON J

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 03/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/816,164	Applicant(s) NOMURA, HIROSHI	
	Examiner Gordon J Stock	Art Unit 2877	

-- Th MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 12-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4.5</u> | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, **Claims 1-11**, in Paper No. 7 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). **Claims 12-14** are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Drawings

2. The drawings and specification are objected to as failing to comply with 37 CFR 1.84(p)(5) because the drawings include the following reference sign(s) not mentioned in the description: 2 of Fig. 11. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The abstract of the disclosure is objected to because it is not in the form of a proper sentence. Correction is required. See MPEP § 608.01(b).

4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

5. **Claim 1** is objected to for the following: on line 5 the phrase, "the evaluation mark," lacks antecedent basis. Appropriate correction is required.
6. **Claim 2** is objected to for the following: the phrase, "arranged in a series," is indefinite, for it is unclear as to how the gratings are arranged in a series. Appropriate correction is required.
7. **Claim 9** is objected to for the following: the phrase, "arranged asymmetrically," is indefinite, for it is unclear as to how the shield area is arranged asymmetrically. Also the phrase, "the substrate," lacks antecedent basis. Appropriate corrections are required.

In addition, **claim 9** is objected to for the following informality: "the evaluation" on line 6 should read --the evaluation mark--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

a. A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. **Claims 1-2** are rejected under 35 U.S.C. 102(b) as being anticipated by **Ota et al.** (5,568,257).

In **claim 1**, Ota in an adjusting device discloses the following: irradiating a fiducial mark having diffraction grating patterns formed on a substrate with illumination light by way of the illumination optical system and observing the fiducial mark by way of the projection optical system to obtain the intensity of the fiducial mark and measuring a displacement of the optical

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axis on the basis of the relationship between the intensity and the direction of the patterns of the fiducial mark (Figs. 1, 3, 4; col. 6, lines 30-55; col. 17, lines 45-67; cols. 18-20)

As to **claim 2**, Ota discloses everything as above (see **claim 1**). In addition, Ota discloses the fiducial mark is composed of at least two gratings connected together and arranged in a series, each having parallel bars that extend in a direction different from those of any other grating (Fig. 4; col. 6, lines 35-45).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. **Claims 3-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ota et al. (5,568,257)** in view of **Endo et al. (4,758,864)** and in view of **Von Bunau et al. (5,863,712)**.

As for **claims 3-4**, Ota discloses everything as above (see **claims 1-2**). In addition, Ota discloses that normal light is blocked (col. 11, lines 50-55). He is silent concerning blocking the diffraction light at the position of the pupil of the projection system. Endo in a projection exposure apparatus discloses distinguishing the positive and negative diffracted lights discretely and other variations of diffracted and undiffracted light imaging (col. 9, lines 1-35) and Von Bunau in a projection exposure system teaches using a replaceable or rotatable pupil filter asymmetrically arranged for improving images by increasing depth of focus of an isolated pattern (col. 2, lines 20-35; col. 3, lines 30-35; Figs. 8a-8c) which would block either the

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negative or positive orders of diffraction light. Therefore, it would be obvious to one skilled in the art at the time the invention was made to block the diffraction light through using a replaceable rotatable pupil filter asymmetrically arranged to improve images through increasing depth of focus.

As for **claims 5-8**, Ota discloses everything as above (see **claims 1-2**). He is silent concerning blocking a plurality of diffraction light at the position of the pupil of the projection system asymmetrically and differentiating the intensity's asymmetrically. Endo in a projection exposure apparatus discloses distinguishing the positive and negative diffracted lights discretely and other variations of diffracted and undiffracted light imaging (col. 9, lines 1-35) and Von Bunau in a projection exposure system teaches using a replaceable or rotatable pupil filter asymmetrically arranged for improving images by increasing depth of focus of an isolated pattern (col. 2, lines 20-35; col. 3, lines 30-35; Figs. 8a-8c) which would block either the negative or positive orders of diffraction light. In addition, a plurality of diffracted light is produced by irradiating the fiducial mark (col. 17, lines 45-67; col. 1-45). Therefore, it would be obvious to one skilled in the art at the time the invention was made to block a plurality of diffraction light through using a replaceable rotatable pupil filter asymmetrically arranged to improve images through increasing depth of focus. And by this it would be obvious to one skilled in the art that the intensities of diffracted light are differentiated asymmetrically, for the diffracted light is asymmetrically blocked.

12. **Claims 9-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ota et al. (5,568,257)** in view of **Von Bunau et al. (5,863,712)**.

As for **claim 9**, Ota discloses an adjusting device for an alignment apparatus: an illumination optical system through which illumination light to be applied to an evaluation mark passes (Fig. 1; 2); a projecting optical system through which the illumination light reflected from the evaluation mark passes (Fig. 1, col. 6, lines 10-55). Ota is silent concerning a removable and rotatable shield means provided at a pupil of the projection optical system and having a shield area, the shield area arranged asymmetrically relative to normal light of the illumination light from the substrate. Von Bunau in a projection exposure system teaches using a replaceable or rotatable pupil filter asymmetrically arranged for improving images by increasing depth of focus of an isolated pattern (col. 2, lines 20-35; col. 3, lines 30-35; Figs. 8a-8c). Therefore, it would be obvious to one skilled in the art at the time the invention was made to have removable and rotatable shield means provided at a pupil of the projection optical system asymmetrically arranged to increase depth of focus of an isolated pattern.

As for **claims 10-11**, Ota in view of Von Bunau discloses everything as above (see **claim 9**). In addition, Ota discloses the fiducial mark is formed on a substrate on the stage (col. 6, lines 30-35). As for forming the fiducial mark on the stage, the Examiner takes Official Notice that forming the fiducial mark on a stage or on a substrate is well known in the art. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have the fiducial member formed on the stage rather than a substrate, for forming the fiducial member on the stage and forming the fiducial mark on the substrate are merely design choices for an alignment system.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

U.S. Patent 5,243,195 to Nishi

U.S. Patent 5,583,609 to Mizutani et al.

U.S. Patent 6,118,516 to Irie et al.

Fax/Telephone Numbers

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and

2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (703) 308-7722

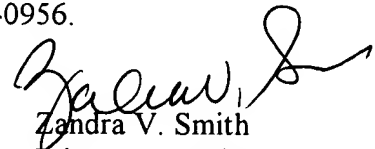
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (703) 305-4787. The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

DD

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March 20, 2003


Zandra V. Smith
Primary Examiner
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